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Where to Get
The Vitamins and Minerals
Important in Human Nutrition

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Where to Get the Vitamins and Minerals Important in Human Nutrition

By WILLIAMINA ARMSTRONG
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Liberal amounts of the protective foods—milk, eggs, fresh vegetables and fruits, meat, and whole-grain products—are the simplest and most economical sources of vitamins and minerals for a normal, healthy person. These foods are called "protective" because they furnish the minerals, vitamins, and proteins which protect the body from disease and from premature old age. Buoyant health, "pep," and "preservation of the characteristics of youth" are possible only when adequate amounts of the protective foods are eaten.

Generous amounts of the protective foods are needed by persons of all ages. Adults need them as well as children. Elderly persons require them too, if they are to keep "hale and hearty." Rapidly growing adolescents (boys 15 to 21 and girls 10 to 16) need even larger amounts of these foods than do adults.

To help Oklahoma housewives choose foods which will supply the vitamins and minerals required by their families, the following tables were prepared. They show the best sources of each vitamin and mineral as well as the effects of various defiencies. These tables also illustrate how many of the vitamins and minerals necessary for buoyant health are found in the protective foods. Of the sixteen items listed, milk is an excellent source of eight, eggs of seven, meat in some form of eleven, vegetables and fruits of eight, and whole-grain products of seven.

Natural Foods Are Best Source

There is every reason to believe that a normal, healthy person can obtain all the vitamins he needs from foods without the use of vitamin preparations. The one exception to this statement is the need of the child and the expectant or nursing mother for a reliable source of vitamin D, such as the fish liver oils. Natural foods, in general, furnish insignificant and variable amounts of this vitamin.

Vitamin preparations are expensive and furnish, in the main, only those vitamins about which considerable is known. Natural foods undoubtedly contain many vitamins or vitamin-like substances about which we know nothing but which are

essential for health. Moreover, few vitamin preparations furnish significant amounts of all of the vitamins. For example most preparations contain very little riboflavin (vitamin B_2 or G). Yet medical authorities believe that a lack of riboflavin is the most prevalent deficiency in this country, and nutritionists estimate that human beings need 1.5 times as much riboflavin as thiamin for the efficient functioning of body processes.

Minimum Requirements

To assure an adequate intake of the vitamins, minerals and proteins so important for health, a person needs to eat *every day at least*——

MILK
For a growing child, ¾ to 1 quart
For an expectant or nursing mother, 1 quart
For other family members, 1 pint or more

EGGS
1 (or at least 3 or 4 a week)

LEAN MEAT, POULTRY, FISH
1 or more servings

TOMATOES, ORANGES, GRAPEFRUIT—any Raw Fruit or Vegetable Rich in Vitamin C
1 or more servings

LEAFY, GREEN, OR YELLOW VEGETABLES
1 or more servings

POTATOES, OTHER VEGETABLES, OR FRUIT
2 or more servings

CEREALS AND BREAD
At least 2 servings of whole-grain products and/or enriched products

The amounts listed are the *minimum* amounts necessary. *Eat more of these foods, if you can.*

Method of Preparation is Important

The individual who is anxious to secure the proper kinds and amounts of food for buoyant health must not only select his foods so as to include liberal amounts of those that are protective, but must also watch the way in which those foods are prepared. Vegetables furnish important amounts of the

vitamins, yet many of these vitamins are lost through improper methods of cooking. The basic rules for vegetable cookery which will conserve the vitamin content are:

1. Use as little water as possible.
2. Cook as short a time as possible.
3. Use the cooking water.
4. Serve immediately.

At least one serving of a raw fruit and one of a raw vegetable should be eaten every day.

Explanation of Words Used in Tables

To save space in the following tables, some of the words used are explained here, as follows:

Stable of heat—Not destroyed or changed by cooking temperatures.

Soluble—Can be dissolved in, or leached out by, water, fat, etc.

Easily oxidized—Easily destroyed or changed by the oxygen present in the air.

Mucous membranes—The tissue lining the mouth, the nose, the eyelids, the throat, the genital organs, etc.

Cellular—Refers to something which occurs within or is a part of a cell.

Enzymes—In these tables, "enzymes" refer to chemical substances or groups of substances (enzymes systems) which act in the body to transform foods into energy or into a part of the body.

Assimilation—The process of changing food into a part of the living body.

The VITAMINS Important in Human Nutrition and How to Secure Them

	Properties of the Vitamin	Functions of the Vitamin in the Body	Some Conditions** in Man Which Have Been Caused by Lack of the Vitamin or Cured by Feeding the Vitamin	BEST SOURCES OF VITAMINS*	
				Plant Sources	Animal Sources
VITAMIN A	Stable to heat; insoluble in water; soluble in fat; easily oxidized.	Necessary for growth, for the health of the skin and mucous membranes, and for the ability to see in dim light.	Night blindness; sensitivity of eyes to bright light; dryness and scaliness of skin; "goosepimple" skin; ingrown hair.	Carrots Spinach Kale Broccoli Wild greens Collards Leaf lettuce Green cabbage Escarole Tomatoes Green beans Green peas Squash Sweet potatoes	Liver Fish liver oils Egg yolk Butter Cream Cheese Milk, whole
VITAMIN D	Stable to heat; insoluble in water; soluble in fat.	Necessary for growth and formation of strong healthy bones and teeth.	Rickets; poor calcification of teeth and bones.	None	Fish liver oils

* In the case of vitamin A, thiamin, riboflavin, nicotinic acid and ascorbic acid, the sources are listed in the order of the approximate potency of an average size serving of the food (3½-4 oz. of meat and vegetables, 1 egg, ½ oz. butter, 1 glass milk, etc.). Too little evidence is available for the other vitamins to permit the listing of foods in the order of potency.

** All of the conditions listed have been reported in medical literature as occurring due to the lack of a mineral (under carefully controlled experimental conditions) or as being cured by the administration of a mineral either in the form of a pure chemical compound or in the form of a food. If you suffer from any of these conditions do two things: first, consult your doctor; then, check on your food habits.

(Table continued.)

The VITAMINS Important in Human Nutrition and How to Secure Them, Continued.

	Properties of the Vitamin	Functions of the Vitamin in the Body	Some Conditions** in Man Which Have Been Caused by Lack of the Vitamin or Cured by Feeding the Vitamin	BEST SOURCES OF VITAMINS*	
				Plant Sources	Animal Sources
TOCOPHEROL (Vitamin E)	Easily oxidized; insoluble in water; soluble in fat.	Necessary for growth, for reproduction, and for the development of healthy muscles.	Muscle weakness; some types of muscle paralysis; sterility; some types of rheumatism; wryneck.	Beans and peas Green leafy vegetables Oils from corn, cottonseed and other seeds Whole grain products	Egg yolk Muscle meats Cream
VITAMIN K	Stable to heat; insoluble in water; soluble in fat.	Necessary for the rapid clotting of blood.	Slow clotting of blood, particularly in first ten days of life and in cases of obstructive jaundice; excessive loss of blood at childbirth; hemorrhages following operations.	Collards Green cabbage Kale Spinach Tomatoes	(None comparable to plant sources)
UNSATURATED FATTY ACIDS	Easily oxidized; insoluble in water; soluble in fat.	Necessary for growth and for health of the skin.	Eczema; scaliness of skin.	Oils from corn, cottonseed and other seeds	Egg yolk Fat pork Lard Liver Fish liver oils
VITAMIN B—COMPLEX 1. Thiamin (vitamin B_1)	Water soluble; destroyed by heat, especially in the presence of alkali.	Necessary for growth, for the utilization of carbohydrates, for the health of the nerves, and for the stability of the nerves.	Poor appetite; constipation; tiredness; low capacity to do work; neuralgia; tingling in feet and hands; nervousness; some types of heart trouble; dropsy; sleeplessness.	Whole grain products—bread, flour, cereals Wheat germ Bran Peas Beans—soy, lima, navy, and others	Pork, lean Heart Liver Kidney Muscle meats other than pork Eggs Fish Milk

The VITAMINS Important in Human Nutrition and How to Secure Them, Continued.

2. Riboflavin (vitamin B_2 or G)	Water soluble; heat stable; destroyed by sunlight, especially in the presence of vitamin C; destroyed by alkali.	Necessary for growth, for the utilization of carbohydrates, for the health of the oil glands of the skin and for the health of the skin and mucous membranes of the body.	Eyes that burn, itch, tire easily or are sensitive to bright light; pink tinge surrounding iris of eye; blackheads and "whiteheads," oily skin; tiny blood vessels visible on face; sore lips with cracks at corners; purplish color of tongue; decreased resistance to infections.	(None comparable to animal sources) Best plant sources are those green leafy vegetables listed for vitamin A	Liver Kidney Heart Sweet breads Muscle meats Milk Eggs
3. Niacin (Nicotinic acid)	Water soluble; heat stable.	Necessary for growth, and the utilization of carbohydrate, for emotional stability, and for the health of the skin and mucous membranes of the body.	Sore mouth and tongue; burning of throat; alternate constipation and diarrhea; pain in the region of the breast bone; rough, chapped skin, particularly in winter; sleeplessness; emotional instability; hysteria; delirium; decreased resistance to infections.	Collards Green cabbage Kale Leaf lettuce Spinach	Liver Kidney Muscle meats Milk Eggs Fish

(Table continued.)

The VITAMINS Important in Human Nutrition and How to Secure Them, Continued.

	Properties of the Vitamin	Functions of the Vitamin in the Body	Some Conditions** in Man Which Have Been Caused by Lack of the Vitamin or Cured by Feeding the Vitamin	BEST SOURCES OF VITAMINS*	
				Plant Sources	Animal Sources
4. Pyridoxin (vitamin B_6)	Water soluble.	Necessary for growth, and in animals for the utilization of fat and for the health of the skin.	Some types of shaking palsy; rigidity of muscles; lack of facial expression; sleeplessness; nervousness; poor appetite; weakness; sore, shiny, cracked edges of tongue.	Beans and peas Bran Wheat germ Whole grain products—bread, flour, cereals	Liver Kidney Muscle meats Fish
5. Pantothenic acid	Water soluble; heat stable.	Necessary for growth and in animals for the prevention of premature graying of hair.	Some types of gray hair; muscle weakness; general lassitude.	Beans and peas Green cabbage Kale Spinach Whole grain products—bread, flour, cereals Wheat germ	Eggs Liver Kidney Milk Muscle meats
ASCORBIC ACID (vitamin C)	Readily destroyed, especially in the presence of copper or alkali; water soluble.	Necessary for growth, for the utilization of protein, for healing of wounds, for development of bones and teeth.	Tiredness; decreased capacity to do work; laziness; skin hemorrhages; spongy, bleeding gums; poor healing of cuts and wounds; serious after-effects of disease; lowered resistance to disease.	Oranges Grapefruit Raw vegetables Tomatoes Strawberries Sprouted beans and grains Potatoes, white	(Non comparable to plant sources)

The MINERALS Important in Human Nutrition and How to Secure Them

	Functions of the Minerals in the Body	Some Conditions** in Man Which Have Been Caused by Lack of Mineral or Cured by Feeding Minerals	BEST SOURCES OF MINERALS*	
			Plant Source	Animal Source
CALCIUM	Necessary for building of bones and teeth, and for muscle contraction and relaxation.	Poorly calcified bones and teeth.	Although many plants contain calcium, evidence seems to show that man is unable to use that calcium efficiently.	Milk Whole milk, cheese
IRON	Necessary for the formation of hemoglobin, and of certain cellular enzymes.	Tiredness; general weakness; laziness; anemia; slow progress in school and mental dullness.	Bran Molasses Beans Green leafy vegetables Peas Whole grain products (There is considerable doubt of man's ability to use iron from vegetables and bran.)	Eggs Liver Muscle meats Oysters

* The sources are listed in the order of the approximate potency of an average size serving of the food (3½-4 oz. of meats and vegetables, 1 egg, ½ oz. butter, 1 glass milk, etc.)

** All of the conditions listed have been reported in medical literature as occurring due to the lack of a mineral (under carefully controlled experimental conditions) or as being cured by the administration of a mineral either in the form of a pure chemical compound or in the form of a food. If you suffer from any of these conditions do two things: first, consult your doctor; then, check on your food habits.

The MINERALS Important in Human Nutrition and How to Secure Them, Continued

	Functions of the Minerals in the Body	Some Conditions** in Man Which Have Been Caused by Lack of Mineral or Cured by Feeding Minerals	BEST SOURCES OF MINERALS*	
			Plant Source	Animal Source
PHOSPHORUS	Necessary for building of bones and teeth, and for the assimilation of some nutrients.	Poor bone and tooth devlopment.	Beans and peas Green leafy vegetables Whole grain products (It is possible that man is not able to use phosphorus from whole grain products.)	Eggs Liver Milk Muscle meats
COPPER	Necessary for the efficient use of iron in the body.	Poor hemoglobin formation; tiredness; anemia.	Dried fruits Whole grain products	Oysters Liver
IODINE	Necessary for the production of thyroxine by the thyroid gland.	Lack of thyroxine; resulting in loss of energy; mental dullness; obesity.	The amount of iodine in plants depends upon the amount in the soil	Fish liver oils Sea food

Conditions Which May Increase an Individual's Need for Food Nutrients

An "x" under a nutrient indicates that the individual's need for that nutrient is increased under the conditions shown in the column at the left.

	VITAMINS								Protein	Mineral
	A	K	E	Thiamin	Ribo-flavin	Nicotinic Acid	Pyri-doxine	Ascorbic Acid		
Rapid growth	x	x	x	x	x	x	x	x	x	x
Pregnancy	x	x	x	x	x	x	x	x	x	x
Greatly increased physical activity	x	x	x	x	x	x	x	x		
High caloric intake, especially if large amounts of refined ceral products or sugar are eaten				x	x	x				
Colds or influenza	x				x					
Tuberculosis	x							x		
Diseases in which a toxin is formed, such as diphtheria								x	x	
Infections of any kind	x			x	x	x	x	x	x	x
Diarrhea				x	x	x	x	x		
Use of mineral oil as a laxative	x	x	x							
Restricted flow of bile due to gall stones, etc.	x	x	x							

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